Name: Date:

Polynomial Factoring solution (version 15)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 - 12x + 60 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(-12) \pm \sqrt{(-12)^2 - 4(1)(60)}}{2(1)}$$

$$x = \frac{-(-12) \pm \sqrt{144 - 240}}{2(1)}$$

$$x = \frac{12 \pm \sqrt{-96}}{2}$$

$$x = \frac{12 \pm \sqrt{-16 \cdot 6}}{2}$$

$$x = \frac{12 \pm 4\sqrt{6}\, i}{2}$$

$$x = 6 \pm 2\sqrt{6}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $-7 - 2i$ and $5 - 6i$ in standard form $(a + bi)$.**

Solution

$$(-7 - 2i) \cdot (5 - 6i)$$

$$-35 + 42i - 10i + 12i^2$$

$$-35 + 42i - 10i - 12$$

$$-35 - 12 + 42i - 10i$$

$$-47 + 32i$$

Polynomial Factoring solution (version 15)

3. **Write function $f(x) = x^3 - 8x^2 + 4x + 48$ in factored form. I'll give you a hint: one factor is $(x - 4)$.**

Solution

	1	-8	4	48
4		4	-16	-48
	1	-4	-12	0

$$f(x) = (x-4)(x^2 - 4x - 12)$$

$$f(x) = (x-4)(x-6)(x+2)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = (x+7) \cdot (x+2) \cdot (x-3)^2$$

Sketch a graph of polynomial $y = p(x)$.